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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/590,597	08/24/2006	Torsten Hackner	CBZ-1559B	8755
22827 7590 05/21/2009 DORITY & MANNING, P.A. POST OFFICE BOX 1449 GREENVILLE, SC 29602-1449			EXAMINER CHRISTIAN, MARJORIE ELLEN	
			ART UNIT	PAPER NUMBER
			1797	
			MAIL DATE	DELIVERY MODE
			05/21/2009	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/590,597

**Applicant(s)**

HACKNER ET AL.

**Examiner**

MARJORIE CHRISTIAN

**Art Unit**

1797

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 24 August 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 57-82 is/are pending in the application.
- 4a) Of the above claim(s) 78-82 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 57-77 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 57-82 are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/CDC)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_
- Paper No(s)/Mail Date \_\_\_\_\_

## DETAILED ACTION

### *Summary*

1. This is the initial Office action based on the application filed August 26<sup>th</sup>, 2006.
2. Claims 57-77 are pending and have been fully considered, Claims 78-82 have been withdrawn from consideration.

### *Election/Restrictions*

3. Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Group I, claims 57-77, drawn to an apparatus comprising a wash chamber, membrane module, and sieve, air is supplied into the wash chamber and distributed evenly through the sieve.

Group II, claims 78-82, drawn to a method comprising supplying air to the wash chamber evenly through the sieve and removing permeate from the membrane module.

The inventions listed as Groups I and II do not relate to a single inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features. Specifically, US Patent No. 6,284,135, OOKATA et al. (hereinafter OOKATA) in view of US PGPub 2003/0080054, CHUANG et al. (hereinafter CHUANG) discloses a similar special technical feature. The special feature disclosed by OOKATA as a supplying air to the wash chamber (Fig. 2, Ref. L4, L5) and distributing the air from the wash chamber (71) evenly across the membrane

module so that the air flows upward and through the membrane module (50) to clean filter plates in the membrane module (Abstract). OOKATA does not appear to expressly disclose a sieve between the membrane module and washing chamber, however CHUANG discloses a wash chamber (40) which includes an air source (6) separated from the filtration section (32) by a sieve (9) that evenly distributes air.

At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify the membrane unit of OOKATA to include the sieve between the wash chamber and membrane module of CHUANG. The motivation would have been to evenly distribute air into the filtration section of the membrane unit and to avoid entry of large particulate matter into the membrane module.

During a telephone conversation with Mr. Stephen Bondura on 5/15/2009 a provisional election was made without traverse to prosecute the invention of Group 1, claims 57-77. Affirmation of this election must be made by applicant in replying to this Office action. Claims 78-82 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

#### ***Priority***

4. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

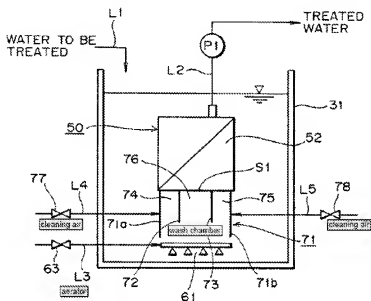
#### ***Claim Rejections - 35 USC § 103***

5. **Claims 57, 60-62, 64-66 are rejected under 35 USC 103 (a) as being obvious over US Patent No. 6,284,135, OOKATA et al. (hereinafter OOKATA) in view of US PGPub 2003/0080054, CHUANG et al. (hereinafter CHUANG).**

As to Claims 57, 60-61, 65, OOKATA discloses equipment in a basin or tank containing wastewater (Fig. 2, Abstract, see annotated figure below), comprising: a membrane unit (50) with a wash chamber below a membrane module (52) containing filter plates (Fig. 5) and a wastewater infeed (through S1); the wash chamber has an air connection (L4, L5) supplying air to the chamber to clean the filter plates (C6/L56-67, C7/L27-32); and an aerator (61) separate from the wash chamber that is supplied from a different air source (C6/L56-67). OOKATA discloses the skirt apparatus *[frame]* for evenly spacing the filter plates in the membrane module and for moving waste water and air into the membrane module (S1, C5/L61-64 & C7/L6-26) but does not appear to expressly disclose a sieve between the wash chamber and membrane module. However, it would be obvious to a person having ordinary skill in the art to include a sieve as disclosed by CHUANG. CHUANG discloses a wash chamber (40) which includes an air source (6) separated from the filtration section (32) by a sieve (9) that evenly distributes air.

At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify the membrane unit of OOKATA to include the sieve between the wash chamber and membrane module of CHUANG. The motivation would have been to evenly distribute air into the filtration section of the membrane unit. Therefore, the

invention as a whole would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made.



As to Claims 62, 66, OOKATA (in view of CHUANG) does not appear to expressly disclose that the aerator and height of the membrane unit within the frame is adjustable, however it has been held that making an apparatus adjustable is not a patentable advance because there is an art-recognized need to have adjustable components to respond to flow conditions within the tank or basin. *In re Stevens*, 212 F.2d 197, 101 USPQ 284 (CCPA 1954).

As to Claim 64, CHUANG discloses that the wash chamber (Fig. 1, Ref. 40) has an opening (18) for removal of sludge.

6. Claims 58-59, 67-68, 73-75, 77 are rejected under 35 USC 103 (a) as being obvious over US Patent No. 6,284,135, OOKATA et al. (hereinafter OOKATA) in

**view of US PGPub 2003/0080054, CHUANG et al. (hereinafter CHUANG) and US Patent No. 6,843,908, OKAJIMA et al. (hereinafter OKAJIMA).**

As to Claims 58-59, CHUANG discloses that the sieve comprises a plate with a plurality of holes less than the diameter of the porous carriers (Pg. 1, Para. 15, Fig. 1, Ref. 9) and waste water feed (2). CHUANG and OOKATA do not appear to expressly disclose that the sieve is vertically oriented at the wastewater infeed. However, OKAJIMA discloses a wastewater apparatus (Fig. 6) with an inlet in the membrane module (50), where it would be obvious to include the sieve of CHUANG at a vertical orientation over the membrane module infeed to avoid clogging of the membranes by large particulate matter, Further it has been held that rearrangement of parts is not patentable as it does not modify the operation of the device. *In re Japikse*, 181 F.2d 1019, 86 USPQ 70 (CCPA 1950).

At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify the wastewater infeed of CHUANG and OOKATA to include the wastewater infeed in the membrane module of OKAJIMA. The motivation would have been to compensate for the a reduction in flow due to6 membrane separation action in the lower set plate membranes and dilute the sludge concentration between the membrane plates thereby increasing efficiency (C12/L1-7). Therefore, the invention as a whole would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made.

As to Claims 67-68, OOKATA (in view of CHUANG) discloses a permeate pump (P1) and permeate line (L2) with a control system (C5/L25-33). OOKATA (in view of

CHUANG) does not appear to expressly disclose that the controller operates the pump as function of a level controller. However, OKAJIMA discloses a control system (Fig. 6, Ref. 38) comprising a level controller (37) within the tank (33) to control operation of the permeate pump (P) as a function of the level of liquid within the tank (C17/L4-16). OKAJIMA also discloses an auxiliary permeate pump (30) controlled by said control system (38).

As to Claims 73-74, OKAJIMA discloses said level controller is configured to determine a plurality of liquid levels (C17/L4-11), the control system controls operation of the permeate pump as a function of different detected liquid levels within the tank (C17/L11-16). OKAJIMA does not appear to expressly disclose that the permeate pump is a variable pump. However, OOKATA discloses a variable speed permeate pump that is varied by the controller (C5/L25-33).

As to Claim 74-75, 77, OOKATA discloses an aerator controlled by the control system (C5/L50-60) and permeate pump C5/L25-33) but does not appear to expressly disclose that the controller operates based on the liquid level within the tank. However, OKAJIMA discloses that the control system controls operation of the permeate pump, and supply of cleaning air to the wash chamber as a function of liquid level within the tank (C17/L4-55). It would have been obvious to include the control features of both OKAJIMA and OOKATA as both influence efficiency of the membrane filtration operation to improve performance.



7. **Claim 63 is rejected under 35 USC 103 (a) as being obvious over US Patent No. 6,284,135, OOKATA et al. (hereinafter OOKATA) in view of US PGPub 2003/0080054, CHUANG et al. (hereinafter CHUANG) as evidenced by US Patent No. 5,690,864, TYER (hereinafter TYER).**

As to Claim 63, OOKATA discloses that the aerator that discharges gas bubbles (C6/L1-16) and appears to have a plurality of holes (61), CHUANG discloses that the aerator has a plurality of holes (Fig. 1, Ref. 7, 8). It is implicit that the aerator comprises a flexible hose as it is a well known configuration for aerators' in wastewater treatment filtration assemblies as evidenced by TYER. TYER discloses an aeration system for wastewater treatment apparatus that comprises a flexible hose with a plurality of openings therein (Abstract).

8. **Claim 69 is rejected under 35 USC 103 (a) as being obvious over US Patent No. 6,284,135, OOKATA et al. (hereinafter OOKATA) in view of US PGPub 2003/0080054, CHUANG et al. (hereinafter CHUANG) and US Patent No. 6,843,908, OKAJIMA et al. (hereinafter OKAJIMA) as evidenced by US Patent No. 6,808,628, CHANG et al. (hereinafter CHANG).**

As to Claim 69, OOKATA discloses that the permeate pump's flow rate is adjusted by controlling the rotational speed of the pump (C5/L25-34) based on the desired filtration of water or permeation rate of water, which would implicitly include a flow meter to provide feedback to the controller, Further it is well known to use flow meters in the permeate line to control fluid flow as evidenced by CHANG. CHANG

discloses an outlet water flow meter in the permeation line after the pump to provide feedback to control the filtration module's operations (C4/L33-44).

9. **Claims 70-72 are rejected under 35 USC 103 (a) as being obvious over US Patent No. 6,284,135, OOKATA et al. (hereinafter OOKATA) in view of US PGPub 2003/0080054, CHUANG et al. (hereinafter CHUANG) and US Patent No. 6,843,908, OKAJIMA et al. (hereinafter OKAJIMA) as evidenced by US Patent No. 5,536,404, DREWEY (hereinafter DREWEY).**

As to Claim 70, OKAJIMA discloses a water level gauge that provides feedback to the controller (37, 38) but does not appear to expressly disclose that the level controller is a float switch. However, it is well known by a person having ordinary skill in the art to use a known equivalent (float switch) to measure and control membrane filtration operations based on liquid levels in the tank as evidenced by DREWEY, DREWEY discloses using a float switch to control liquid levels in membrane filtration operations (C6/L60-C7/L10). *In re Ruff*, 256 F.2d 590, 118 USPQ 340 (CCPA 1958).

As to Claims 71-72, OKAJIMA discloses an open/close valve (30) in the permeate line (29) actuated by said control system (38, C9/L30-33) where it would naturally flow that the open/close valve is a throttle valve, as evidenced by DREWEY. DREWEY discloses that a throttle valve is used in the permeate line to control the flow rate of filtered effluent out of the tank (C7/L64-C8/L6).

10. **Claim 76 is rejected under 35 USC 103 (a) as being obvious over US Patent No. 6,284,135, OOKATA et al. (hereinafter OOKATA) in view of US PGPub 2003/0080054, CHUANG et al. (hereinafter CHUANG), US Patent No. 6,843,908, OKAJIMA et al. (hereinafter OKAJIMA) and US Patent No. and US Patent No. 4,940,550, WATSON (hereinafter WATSON).**

As to Claim 76, OOKATA (in view of CHUANG and OKAJIMA) discloses monitoring and controlling the conditions of the filtration apparatus as shown in the 103(a) rejection of claim 67. OOKATA (in view of CHUANG and OKAJIMA) does not appear to expressly disclose that conditions within the permeate line are monitored by a sight glass, however using a sight glass in a filtration apparatus is well known, as disclosed by WATSON. WATSON discloses using a sight glass to measure the density, turbidity and viscosity in the filtration apparatus. At the time of the invention it would have been obvious to a person having ordinary skill in the art to monitor the permeate line by using a sight glass as it is a well known and inexpensive means of monitoring the progress of a filtration system. Therefore, the invention as a whole would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made.

### ***Conclusion***

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MARJORIE CHRISTIAN whose telephone number is

(571)270-5544. The examiner can normally be reached on Monday through Thursday 7-5pm (Fridays off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vickie Kim can be reached on (571)272-0579. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MC

/Krishnan S Menon/  
Primary Examiner, Art Unit 1797